Please substitute the paragraph beginning at page 2, line 11, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- The wavelength band of the F_2 excimer laser is different from the conventional ones described above in that light is readily absorbed by oxygen or moisture. It is also known that light is absorbed by ammonia (NH_3), carbon dioxide (CO_2), organic gas, ozone, and the like. The atmosphere in the optical path of an F_2 laser beam must be controlled to suppress a light absorber to low density. Hence, the atmosphere in the optical path around a reticle and wafer often exchanged on the exposure apparatus is also controlled similarly to the atmosphere in optical systems such as an illumination optical system and a projection optical system. As an effective atmospheric control method, the optical path space is purged with inert gas such as helium gas (He) or nitrogen gas (N_2), or the optical path space is evacuated. --

Please substitute the paragraph beginning at page 3, line 14, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- Prior art examples of a substrate transfer system for a reticle or the like in an exposure apparatus will be described. --

Please substitute the paragraph beginning at page 4, line 8, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- Japanese Patent Laid-Open No. 6-260386 discloses an exposure apparatus and a reticle transfer system. This apparatus comprises a first chamber in which a reticle to be exposed is

airtightly contained and the interior is purged with inert gas, a reticle exchange mechanism for exchanging the reticle with one to be exposed next, a second chamber in which the reticle to be exposed next is airtightly contained and the interior is purged with inert gas, and an opening/closing means for interrupting/allowing communication between the first and second chambers. --

Please substitute the paragraph beginning at page 4, line 19, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- Of these prior art systems, Japanese Patent Laid-Open Nos. 7-321179 and 2000-294496 aim to shorten the substrate transfer time. Japanese Patent Laid-Open No. 6-260386 aims to enable reticle exchange without disturbing the inert gas atmosphere in the reticle stage space. --

Please substitute the paragraph beginning at page 4, line 25, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- However, the prior art systems suffer from the following problems. --

Please substitute the paragraph beginning at page 5, line 10, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- Japanese Patent Laid-Open No. 6-260386 discloses a system of purging the space around a reticle with inert gas, as described above. However, the second chamber is a so-called load-lock chamber. In the layout of directly connecting the load-lock chamber to the first

chamber, a reticle to be exposed next is supplied only after the completion of gas purge in the load-lock chamber for every reticle exchange. This system is effective only when the reticle exchange frequency is very low and the time required to complete gas purge of the load-lock chamber is shorter than the reticle exchange interval. If the reticle exchange frequency is very high, the throughput greatly decreases. --

Please substitute the paragraph beginning at page 6, line 4, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- According to the present invention, the foregoing object is attained by providing an exposure apparatus for transferring a pattern on a master onto a substrate via an optical system comprising: --

Please substitute the paragraph beginning at page 6, line 11, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- a third housing for transferring the master between an inside and an outside of said first housing, --

Please substitute the paragraph beginning at page 7, line 15, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- Fig. 7 is a flow chart for explaining a device manufacturing apparatus process

performed by the exposure apparatus according to the embodiment of the present invention; and --

Please substitute the paragraph beginning at page 7, line 19, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- Fig. 8 is a flow chart for explaining a wafer process performed by the exposure apparatus according to the embodiment of the present invention. --

Please substitute the paragraph beginning at page 8, line 1, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- Fig. 1 is a perspective view showing an exposure apparatus according to the first embodiment of the present invention. Fig. 1 particularly shows the interior of a chamber which covers the overall exposure apparatus, keeps the interior of the exposure apparatus at a predetermined temperature, and keeps dust to a low level. --

Please substitute the paragraph beginning at page 8, line 8, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- In Fig. 1, reference numeral 1 denotes a reticle bearing a circuit pattern. This circuit pattern is illuminated via an illumination optical system (not shown) with a beam emitted by an F_2 excimer laser having an oscillation wavelength around 157 [nm]. The pattern is projected on a wafer 3 at a predetermined magnification via a projection optical system 2. The wafer 3 is set on

a wafer stage 4 having driving shafts in at least the X and Y directions of the coordinate system shown in Fig. 1. The reticle 1 is set on a reticle stage (not shown), and driven in at least the Y direction. The exposure apparatus shown in Fig. 1 is a step and scan type exposure apparatus, which performs scanning exposure in the Y direction while making the reticle 1 and wafer 3 be in synchronism with each other, and sequentially moves the target shot to a next one, step by step. --

Please substitute the paragraph beginning at page 8, line 25, and ending on page 9, line 14, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- Reference numerals 5 and 6 denote pods, which are openable closed vessels for storing a plurality of reticles 1 and are called SMIF pods; and 7 and 8, SMIF indexers having driving mechanisms (not shown) for opening the SMIF pods 5 and 6 so as to allow extracting the reticles 1 from the SMIF pods 5 and 6. The reticles 1 ready to be unloaded by the SMIF indexers 7 and 8 are extracted by a multiaxial transfer robot 9, and transferred to a load-lock chamber 11 along a guide 10. One side of the load-lock chamber 11 is equipped with an opening/closing unit 12. The reticle 1 transferred by the multiaxial transfer robot 9 is loaded into the load-lock chamber 11 via the opening/closing unit 12, which is open. After that, the opening/closing unit 12 is closed, and a nitrogen gas purge control 13 purges the interior of the load-lock chamber 11 with nitrogen gas. --

Please substitute the paragraph beginning at page 10, line 6, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- The temporary reticle stock 17 has a shelf-like structure (shelf-like stock unit) so as to stock a plurality of reticles 1, and a shelf elevating mechanism (not shown) movable in the Z direction so as to adjust the reticle transfer height of the multiaxial transfer robot 15 to the height of a shelf to which the reticle 1 is to be stocked. The temporary reticle stock unit 17 further comprises a detection unit (not shown) for detecting the presence/absence of the reticle 1 on each shelf, and a reading unit (not shown) for a barcode formed at a predetermined position of the reticle 1. All information about the relationship between stocked reticles 1 and their shelves is stored in the control unit (not shown). --

Please substitute the paragraph beginning at page 10, line 20, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- The above-described operation is repeated parallel to an exposure operation of a circuit pattern on the reticle 1 at an exposure position. The temporary reticle stock unit 17 stocks a plurality of reticles 1 up to a stockable number of reticles. --

Please substitute the paragraph beginning at page 14, line 22, and ending on page 15, line 6, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- As described above, according to the first embodiment, a master (reticle 1) is set in the first housing (closed vessel 20) controlled to a predetermined atmosphere at an exposure position. The master (reticle 1) can be placed in an environment in which a substance such as oxygen or moisture which absorbs an exposure beam is suppressed to a low level. The third housing (load-lock chamber 11) enables transferring the master (reticle 1) without influencing the environment in the first housing (closed vessel 20) in loading/unloading the master (reticle 1) into/from the first housing (closed vessel 20). --

Please substitute the paragraph beginning at page 15, line 7, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- The second housing (temporary reticle stock unit 17) can stock a plurality of masters (reticles 1) loaded to the exposure apparatus. This can shorten the transfer path from the stock position of the master (reticle 1) to an exposure position. The atmosphere in the second housing (temporary reticle stock unit 17) is so controlled as not to disturb the atmosphere in the first housing (closed vessel 20) in exchanging the master (reticle 1) at the exposure position. This can shorten the time taken to exchange the master (reticle 1) and start exposure. As a result, high throughput can be realized without greatly increasing the apparatus cost. --

Please substitute the paragraph beginning at page 15, line 23, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- Fig. 2 shows a modification of the nitrogen gas supply to the closed vessel 20 in Fig. 1. The same reference numerals as in Fig. 1 denote the same parts, and a description thereof will be omitted. --

Please substitute the paragraph beginning at page 18, line 11, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- Each of the above embodiments has exemplified a reticle transfer system coping with an SMIF pod. The present invention is not limited to this, and can also be applied to a reticle transfer system coping with a storage means of a reticle library form for storing a plurality of cassettes called reticle cassettes, which store reticles one by one. The present invention can also be applied to a reticle transfer system coping with another mini-environment scheme called a FOUP (Front Opening Unified Pod). --

Please substitute the paragraph beginning at page 19, line 4, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- A production system for producing a semiconductor device (e.g., a semiconductor chip such as an IC or LSI, liquid crystal panel, CCD, or thin-film magnetic head, micromachine, or the like) using the above-described exposure apparatus will be exemplified. A trouble remedy or periodic maintenance of a manufacturing apparatus installed in a semiconductor manufacturing factory, or maintenance service such as software distribution is performed by using a computer network outside the manufacturing factory. --

Please substitute the paragraph beginning at page 19, line 14, and ending on page 20, line 10, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- Fig. 4 shows the overall system cut out at a given angle. In Fig. 4, reference numeral 101 denotes a business office of a vendor (apparatus supply manufacturer), which provides a semiconductor device manufacturing apparatus. Assumed examples of the manufacturing apparatus are semiconductor manufacturing apparatus for performing various processes used in a semiconductor manufacturing factory, such as pre-process apparatuses (e.g., a lithography apparatus including an exposure apparatus, a resist processing apparatus, and an etching apparatus, an annealing apparatus, a film formation apparatus, a planarization apparatus, and the like) and post-process apparatuses (e.g., an assembly apparatus, an inspection apparatus, and the like). The business office 101 comprises a host management system 108 for providing a maintenance database for the manufacturing apparatus, a plurality of operation terminal computers 110, and a LAN (Local Area Network) 109, which connects the host management system 108 and computers 110 to construct an intranet. The host management system 108 has a gateway for connecting the LAN 109 to the Internet 105 as an external network of the business office, and a security function for limiting external accesses. --

Please substitute the paragraph beginning at page 21, line 5, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- More specifically, the factory notifies the vendor via the Internet 105 of status information (e.g., the symptom of a manufacturing apparatus in trouble) representing the operation status of each manufacturing apparatus 106. The factory can receive, from the vendor, response information (e.g., information designating a remedy against the trouble, or remedy software or data) corresponding to the notification, or maintenance information such as the latest software or help information. Data communication between the factories 102 to 104 and the vendor 101 and data communication via the LAN 111 in each factory adopt a communication protocol (TCP/IP) generally used in the Internet. Instead of using the Internet as an external network of the factory, a dedicated-line network (e.g., an ISDN) having high security which inhibits access of a third party can be adopted. It is also possible that the user constructs a database in addition to one provided by the vendor and sets the database on an external network and that the host management system authorizes access to the database from a plurality of user factories. --

Please substitute the paragraph beginning at page 21, line 27, and ending on page 22, line 21, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- Fig. 5 is a view showing the concept of the overall system of this embodiment that is cut out at a different angle from Fig. 4. In the above example, a plurality of user factories having manufacturing apparatuses and the management system of the manufacturing apparatus vendor are connected via an external network, and production management of each factory or

information of at least one manufacturing apparatus is communicated via the external network. In the example of Fig. 5, a factory having manufacturing apparatuses of a plurality of vendors, and the management systems of the vendors for these manufacturing apparatuses are connected via the external network of the factory, and maintenance information of each manufacturing apparatus is communicated. In Fig. 5, reference numeral 201 denotes a manufacturing factory of a manufacturing apparatus user (semiconductor device manufacturer) where manufacturing apparatuses for performing various processes, e.g., an exposure apparatus 202, a resist processing apparatus 203, and a film formation apparatus 204 are installed in the manufacturing line of the factory. --

Please substitute the paragraph beginning at page 22, line 22, and ending on page 23, line 20, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- Fig. 5 shows only one manufacturing factory 201, but a plurality of factories are networked in practice. The respective apparatuses in the factory are connected to a LAN 206 to construct an intranet, and a host management system 205 manages the operation of the manufacturing line. The business offices of vendors (apparatus supply manufacturers) such as an exposure apparatus manufacturer 210, a resist processing apparatus manufacturer 220, and a film formation apparatus manufacturer 230 comprise host management systems 211, 221, and 231 for executing remote maintenance for the supplied apparatuses. Each host management system has a maintenance database and a gateway for an external network, as describe above. The host

management system 205 for managing the apparatuses in the manufacturing factory of the user, and the management systems 211, 221, and 23 of the vendors for the respective apparatuses are connected via the Internet or dedicated-line network serving as an external network 200. If trouble occurs in any one of a series of manufacturing apparatuses along the manufacturing line in this system, the operation of the manufacturing line stops. This trouble can be quickly solved by remote maintenance from the vendor of the apparatus in trouble via the Internet 200. This can minimize the stoppage of the manufacturing line. --

Please substitute the paragraph beginning at page 24, line 27, and ending on page 25, line 27, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- A semiconductor device manufacturing process using the above-described production system will be explained. Fig. 7 shows the flow of the whole manufacturing process of the semiconductor device. In step 1 (circuit design), a semiconductor device circuit is designed. In step 2 (master formation), a master having a designed circuit pattern is formed. In step 3, (wafer manufacture), a wafer is manufactured using a material such as silicon. In step 4 (wafer process) called a pre-process, an actual circuit is formed on the wafer by lithography using the prepared master and wafer. Step 5 (assembly) called a post-process is the step of forming a semiconductor chip by using the wafer manufactured in step 4, and includes an assembly process (dicing and bonding) and a packaging process (chip encapsulation). In step 6 (inspection), inspections such as the operation confirmation test and durability test of the semiconductor device manufactured

in step 5 are conducted. After these steps, the semiconductor device is completed and shipped (step 7). The pre-process and post-process are performed in separate dedicated factories, and maintenance is done in each of the factories by the above-described remote maintenance system. Information for production management and apparatus maintenance is communicated between the pre-process factory and the post-process factory via the Internet or dedicated-line network. --

Please substitute the paragraph beginning at page 26, line 1, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- Fig. 8 shows the detailed flow of the wafer process. In step 11 (oxidation), the wafer surface is oxidized. In step 12 (CVD), an insulating film is formed on the wafer surface. In step 13 (electrode formation), an electrode is formed on the wafer by vapor deposition. In step 14 (ion implantation), ions are implanted in the wafer. In step 15 (resist processing), a photosensitive agent is applied to the wafer. In step 16 (exposure), the above-mentioned exposure apparatus exposes the wafer to the circuit pattern of a master. In step 17 (developing), the exposed wafer is developed. In step 18 (etching), the resist is etched except for the developed resist image. In step 19 (resist removal), an unnecessary resist after etching is removed. These steps are repeated to form multiple circuit patterns on the wafer. A manufacturing apparatus used in each step undergoes maintenance by the remote maintenance system, which prevents trouble in advance. Even if trouble occurs, the manufacturing apparatus can be quickly recovered. The productivity of the semiconductor device can be increased in comparison with the prior art. --